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Eleven technical papers. Titles include *Clustering of Complex Electronic Systems with Self-Ordering Maps*, *Distributed Control System Development for FlexRay-Based Systems*, *Model-Driven Product Line Software Development Process*, and *ODEEP: Open Dependable Electrical and Electronics Platform—Concept and Projects*.

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Controller System Software Testing and Validation

Ten technical papers. Titles include *Automatic Evaluation of ECU Software Tests*, *How to Do Hardware-in-the-Loop Simulation Right*, *Validating Powertrain Controller Systems with the VPACS-HIL Powertrain Simulator*, and *Verifying Code Automatically Generated from an Executable Model*.

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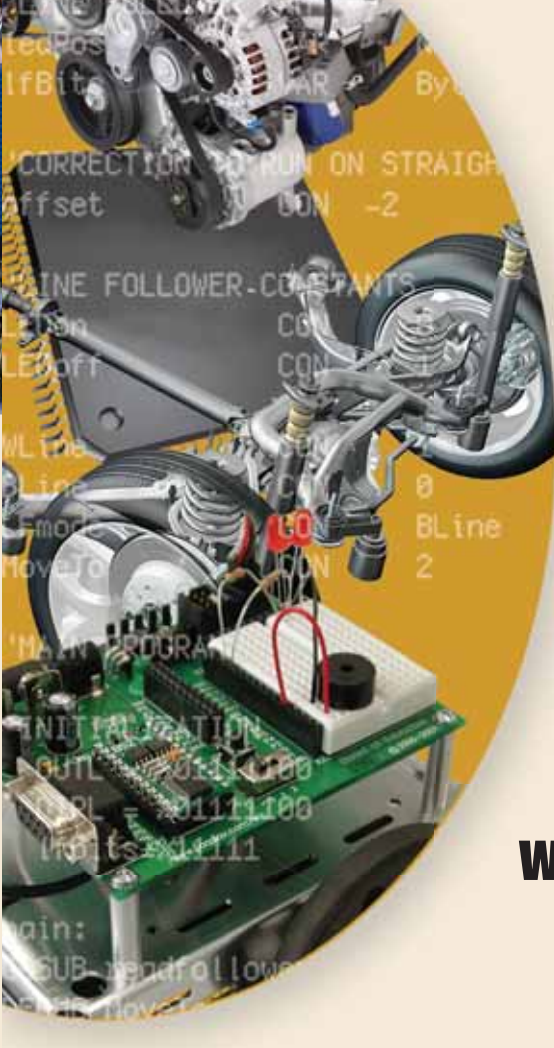
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Engineering Propulsion Controls Symposium

September 6–9, 2005
GM Heritage Center
Sterling Heights, Michigan, USA

Professional engineers build systems that have to function in the real world, so the design, development, and manufacturing methods they apply must be both effective and efficient. **Engineering Propulsion Controls Symposium** covers the automotive sector in broad terms—sessions will analyze control-system building blocks; examine the latest applications, technologies, and trends; and evaluate current research and how it might shape the industry in the future. In addition, the pre-symposium workshop and practical lab session will provide valuable, hands-on experience regarding the theory and practice of designing, developing, and programming embedded controllers.

- **Topical sessions** – Uncover the latest trends in emissions, hybrid technology, FlexRay, silicon engineering, and more
- **Workshop and robot lab** – Acquire practical skills with embedded controllers
- **Networking functions** – Relax and exchange information with peers in comfortable social settings
- **Tabletop exhibits** – Examine the latest tools and solutions in person

Who Should Attend?

This Symposium will serve industry newcomers as well as experienced professionals who have new job responsibilities, want to increase their knowledge, and are interested in policy and future planning.

AGENDA*

Pre-Symposium Workshop • Tuesday, September 6 • 1:30–5:00 p.m.

- 1:30 p.m. **Welcome and Introduction** – Dennis Bogden, Director, Powertrain Electronics, General Motors Corp., and Bernard Challen, CEO, Shoreham Services
 2:00 p.m. **Automotive Control System Design Principles** – Larry Michaels, Powertrain Technical Fellow, Controls Modeling and Simulation, General Motors Corp.
 2:30 p.m. **Model Based Software Engineering** – Bill Milam, Engineer, Ford Motor Company
 3:00 p.m. **DESIGN AND DEVELOPMENT PROCESSES**
 • **New UM/ETAS Tool** – William Miller, Director-Innovation Center, ETAS/Vetronix
 • **Design and Develop Process: Electronic Throttle Example** – Jon Friedman, Automotive Industry Marketing Manager, The MathWorks

Day 1 • Wednesday, September 7	Day 2 • Thursday, September 8	Day 3 • Friday, September 9
7:30 a.m. Registration	8:30 a.m. Announcements – Colette Wright, Program Engineer, SAE International	8:30 a.m. Announcements – Colette Wright, Program Engineer, SAE International
8:30 a.m. Announcements – Colette Wright, Program Engineer, SAE International	VEHICLE AND SILICON ENGINEERING	IMPLEMENTATIONS AND CHALLENGES
Welcome and Introduction – Bernard Challen, CEO, Shoreham Services	8:45 a.m. Hybrid Industry Focus and the AHS2 GM/Daimler System – Larry Nitz, Powertrain Executive Director, Hybrid Engineering, General Motors Corp.	8:45 a.m. Future Vehicle Requirements: How Low Can We Go With Emissions? – Robert Larson, Senior Advisor, U.S. Environmental Protection Agency
FOUNDATIONS OF SYSTEMS AND CONTROLS	9:15 a.m. Freescale's Vision of Automotive Silicon – Ron Stence, Senior Strategic Marketing & Systems Engineer, Freescale Semiconductor, Inc.	9:15 a.m. After-Treatment Challenges – Magdi Khair, Institute Engineer, Southwest Research Institute
8:45 a.m. Managing Propulsion System Controls – Dennis Bogden, Director, Powertrain Electronics, General Motors Corp.	9:50 a.m. Infineon's Vision of Automotive Silicon – Patrick Leteinturier, Senior Principal Automotive Systems Engineer, Infineon Technologies	10:00 a.m. Technology Challenges of Hybrids – Anthony Phillips, Technical Leader, Control Architectures, Ford Motor Company
9:15 a.m. Modern Control Methods – Man-Feng Chang, Manager Powertrain Controls, General Motors Corp.	10:00 a.m. Refreshment Break	10:30 a.m. Refreshment Break
10:00 a.m. Refreshment Break	10:30 a.m. Refreshment Break	11:00 a.m. Rapid Prototyping for Automotive Applications – Jarvis Davis, Applications Engineer, The MathWorks
10:30 a.m. Introducing Engine Fundamentals – Bernard Challen, CEO, Shoreham Services	11:15 a.m. Power Electronics Supporting the Hybrid Vehicle – Michael Duhaime, Engineering Manager, General Motors Corp.	11:30 a.m. Hardware Rapid Prototyping – John Wilson, Area Sales Manager, National Instruments
11:00 a.m. Analytical Engine Calibration Process for Test-Plan Refinement – Peter Maloney, Senior Consulting Team Leader, The MathWorks	11:45 a.m. Architectures and Efficiency for Hybrids – Sam Guido and Grantley Hodge, Technical Specialists, Visteon Corp.	12:00 p.m. Lunch and Keynote Speech
12:00 p.m. Discussion Session – Morning speakers	12:15 p.m. Discussion Session – Morning speakers	IMPLEMENTATIONS—CASE STUDIES
12:15 p.m. Lunch in Exhibit Area	12:30 p.m. Lunch	1:30 p.m. Building a Better Function Approximator Using the Self-Organizing Map – Helge Nareid, Development Engineer, AXEON Ltd.
DESIGN AND MODELING APPROACHES	EMBEDDED DESIGN	2:00 p.m. Co-Simulation of Algorithm and Signal Delivery in the Virtual World – William Goodwin, Signal Delivery Modeling Systems Engineer, General Motors Corp.
1:30 p.m. Signal Delivery Analysis: Theory and Examples – Dennis Bogden, Director, Powertrain Electronics, General Motors Corp.	2:00 p.m. Methods of Addressing Signal Processing Challenges in the Automotive Industry – Mark Corless, Senior Applications Engineer, The MathWorks	2:30 p.m. Flexray Implementations – Florian Hartwich, Robert Bosch
2:30 p.m. Powertrain Control Architectures – Stephan Rosenberg, Senior Applications Engineer EMS Architecture Specialist, Robert Bosch Corp.	3:00–5:00 p.m. Calibration Process Lab Using Robots – Dennis Bogden, Patrick Leteinturier, Ron Stence <i>A group activity using robots to practice calibration of algorithms and software; small teams will be briefed on how their robot works and what their task is; subsequently they will calibrate, program, and test their robot before ultimately competing in a tournament.</i>	3:00 p.m. Open Discussion
3:00 p.m. Refreshment Break	4:15 p.m. Modeling Complex Thermodynamic and Transmissions Systems – Iakovos Papadimitriou, Controls Manager, Gamma Technologies	3:30 p.m. Conclusions – Bernard Challen, CEO, Shoreham Services
3:30 p.m. On-Board Diagnostics Requirements – John Van Gilder, OBD II Lead Development Engineer, General Motors Corp.	5:00 p.m. Discussion Session – Afternoon speakers	SYMPOSIUM ORGANIZING COMMITTEE
4:15 p.m. Modeling Complex Thermodynamic and Transmissions Systems – Iakovos Papadimitriou, Controls Manager, Gamma Technologies	6:30 p.m. Evening Reception in Exhibit Area	<ul style="list-style-type: none"> • Dennis Bogden, General Motors Corp. • Bernard Challen, Shoreham Services • Jon Friedman, The MathWorks • Yiquan Huang, Southwest Research Institute • Scott Lehman, The MathWorks • Patrick Leteinturier, Infineon Technologies • Ron Stence, Freescale Semiconductor • Colin S. Turnbull, AXEON Ltd.

*As of May 1, 2005; subject to change without notice.

Save \$100 – Register by August 19

REGISTRATION AND FEES¹

	By August 19	After August 19
SAE Member	\$695	\$795
Non-Member	\$895	\$995
Participant ²	Free	Free
Exhibit Booth Personnel	Free	Free

¹Registration fee includes continental breakfast, luncheons, and breaks; Evening Networking Reception; and Gala Dinner.

²Speakers and Organizing Committee members; includes Tuesday Speakers' Dinner.

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Conditions of Sale: Registrations received after August 19, 2005, will be charged full admission price. Refunds will be issued only for cancellations received by SAE International before or on August 19, 2005; a \$50 processing fee will be assessed for each such cancellation. No refunds will be issued for cancellations received on or after August 20, 2005. This policy includes special event and meal fees. NO CHILDREN UNDER THE AGE OF 16 PERMITTED.

 If you have a disability that may impact your participation in this event, please contact SAE International at least two weeks prior to the start date so we can address your needs.

HOTEL AND TRAVEL INFORMATION

SAE does not have a reserved block of hotel rooms for this Symposium. A list of suggested hotels near GM Heritage Center is posted at www.sae.org/epc.

VENUE

GM Heritage Center

Opened in June 2004, the 81,000-square-foot GM Heritage Center highlights 96 years of General Motors history and is equal parts archive, museum, and meeting center. The facility features hundreds of classic and concept vehicles—roughly 180 can be displayed at one time—as well as memorabilia and such documents as engineering specifications and operating manuals.

EXHIBIT AND SPONSORSHIP INFORMATION

Tabletop exhibits and sponsorships are cost-effective marketing tools that help you promote your company to an audience of qualified industry professionals. Tabletops enable you to demonstrate face-to-face your products and technologies, while sponsorships generate awareness at key moments during the Symposium and help preserve recognition afterwards.

Tabletop Exhibit \$2,000

- One tabletop display area (6' x 30" table with two chairs)
- One complimentary Symposium registration
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- Recognition as a sponsor of the evening networking reception

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- Gala Dinner *Infineon Technologies*
- Speakers' Dinner..... *AXEON Ltd.*
- Official Symposium pens and notepads..... \$5,000

Daily Sponsorships

- Continental breakfast..... \$3,000 per day
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- Luncheon \$4,000 per day
- Afternoon refreshment break \$2,000

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